



Combat Modeling and Analysis

World Class Modeling Project

Analysis Demonstration



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Analysis Approach

- Problem Definition
- Experimental Design
- Scenario Development
- Model Execution and Data Collection
- Data Analysis
- Results and Conclusions

This is classic analytic methodology, well documented in ORS literature and suitable for repetition using other systems



Modeling Tasks

Analytic Demonstration Tasks

- Scenario Development
- SOF in Surveillance and Reconnaissance
- Improve Strike Module
- Joint Forcible Entry Operations Modeling



Tasks (cont)

- Work with N81 analysts to define study terms
- Design experiments and develop hybrid scenarios together with Metron, N81
- Report results and findings from analysis demonstration



Founded on Navy's current analysis baseline scenario, Concept of Operations (CONOPS), Order of Battle, assumptions, and data

- OPNAV PR-07 Campaign Analysis Process
 - Assessments Division (N81)
 - Campaign Analysis Integrated Process Team (IPT)
- Development of Naval Capability Plans
 - Sea Strike, Sea Basing, and FORCEnet Naval Capability Plans (NCPs)
 - Warfare Integration and Assessment Division (N70)
- Tie to OPNAV's contractors (SPA, SAIC, Metron)
- DoD's March 2004 Strategic Planning Guidance
- Applicable DoD's Multi-Service Force Deployment (MSFD) scenario



Of particular interest

- Navy Special Operations Forces (SEALS) employed from SSGN
- Marine Expeditionary Units' (MEU) Special Operations Capability
 - Raids by smaller MEU elements
- Naval Gun Technologies
 - Advanced Gun System
 - Electro-magnetic Rail Gun
- “Missiles-in-a-Box”
 - Affordable Weapons System (Office of Naval Research)
 - Lightweight Ramjet Air breathing Missile (LRAM) (Boeing/Aerojet)
 - Netfires (Lockheed Martin)
- FORCEnet command and control of distributed fires



The Timeline





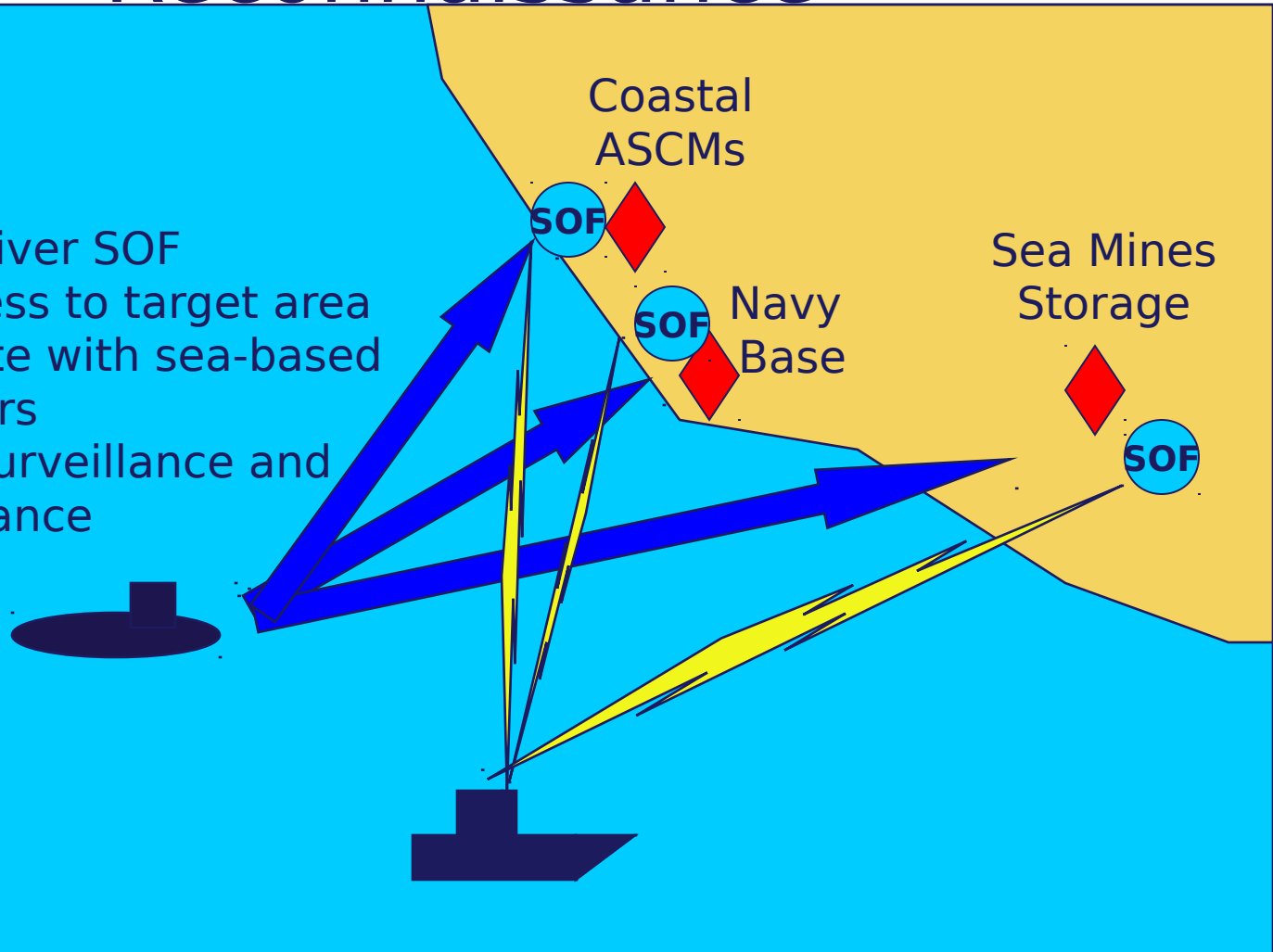
Examine Special Operations Forces (SOF) in Surveillance and Reconnaissance (S & R) role

- Compare the operational efficacy and costs of SOF to an alternative future system of airborne Intelligence, Surveillance, and Reconnaissance (ISR) assets
 - SEALS versus UAV-based architecture (Global Hawk, Predator, J-UCAS)
 - Intelligence and Operational Preparation of the Battlespace (IPB/OPB)
- Measures of Effectiveness
 - Responsiveness to Commanders' changing requirements
 - Operational costs of delivering and sustaining capability
 - Bandwidth
 - Assets to deliver, sustain continuous coverage
 - Risk to platforms, personnel, campaign objectives



Surveillance & Reconnaissance

- SSGN deliver SOF
- SOF ingress to target area
- Coordinate with sea-based commanders
- Provide surveillance and reconnaissance





Improve Strike Module

- Measure impact of FORCEnet, improved C⁴ISR, SeaBased-forces, SeaStrike and other pillars of SEAPOWER 21 on joint ground warfight
- Study: do improved communications architectures enhance or improve strike accuracy, sortie rates and effectiveness?
- Utilize the NSS/Combat^{XXI} M&S framework
- Provide detailed analysis of improved strike rate capabilities for larger Campaign Analysis model
- Evaluate potential alternative strike systems in face of improved C⁴ISR capability

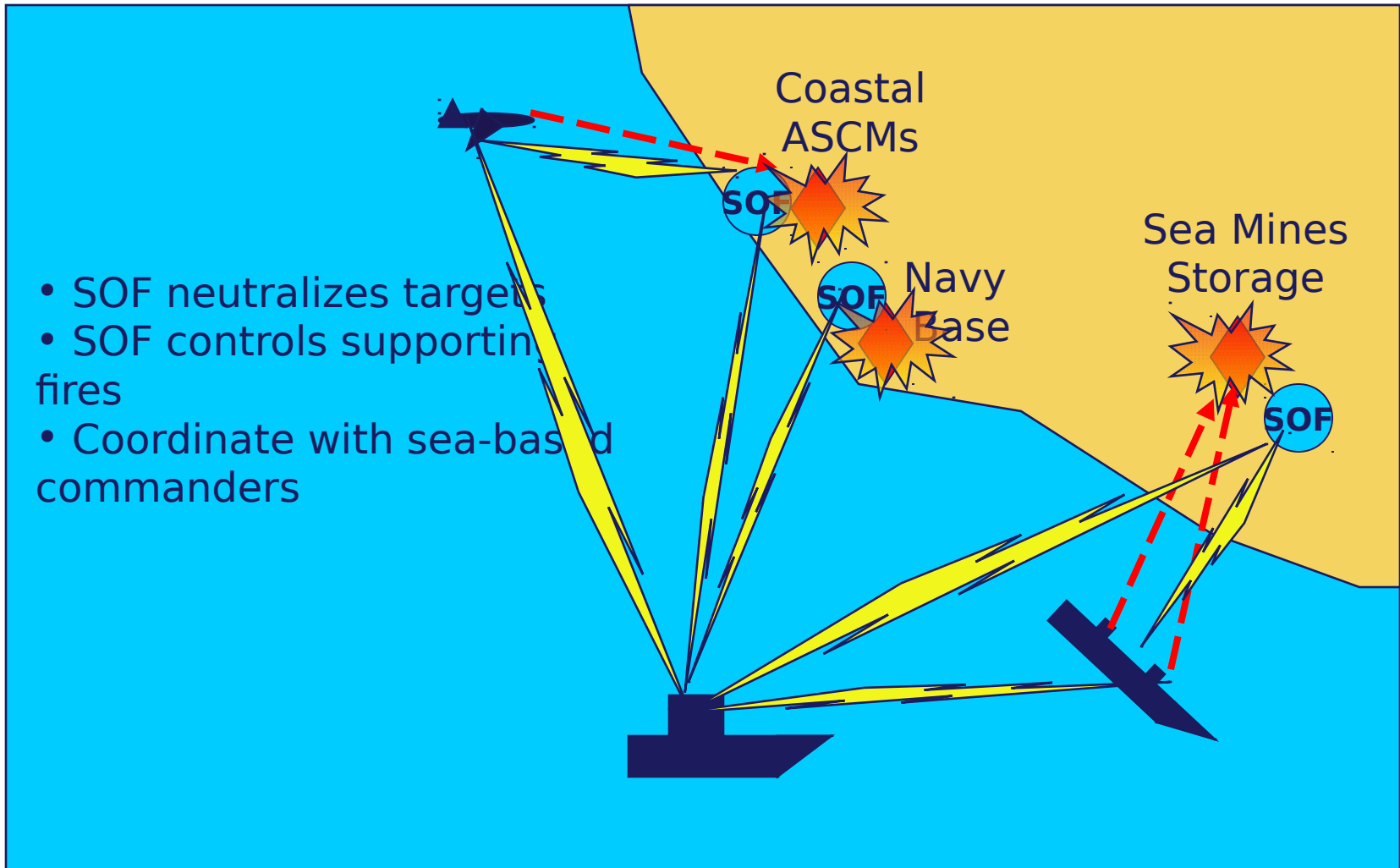


SOF in Direct Action

Examine Special Operations Forces in Direct Action (DA) role

- Compare the capability of SOF targeting to that of a centrally-located targeting facility
 - SEALS versus imagery interpretation and aimpoint mensuration at the Combined Air Operations Center's (CAOC)
 - SOF Direct Action
 - Organic neutralization capability
 - Forward Fire Support Observers/Controllers with strike assets in direct support
 - Maritime Component Commander's priority targets
 - Enemy's maritime access denial capability: coastal Anti-Ship Cruise Missiles (ASCM), mines, submarines
- Measures of Effectiveness
 - Targeting accuracy, processing requirements, and latency
 - Time to achieve required target attrition
 - Operational costs of delivering and sustaining capability
 - Bandwidth
 - Assets to deliver, sustain continuous coverage
 - Risk to platforms, personnel

DIRECT ACTION





Joint Forcible Entry Operations (JFEO)

- Measure impact of C4ISR, SeaBasing and other pillars of SEAPOWER 21 on joint ground warfight
- Study of JFEO in a Major Contingency Operation (MCO) covered by the Campaign Analysis conducted by Director of Assessment Division of the OPNAV staff
- Utilize the NSS/Combat^{XXI} M&S framework
- Study issues: include C4ISR requirements to support different JFEO options employed by joint forces commander in prosecution of a MCO



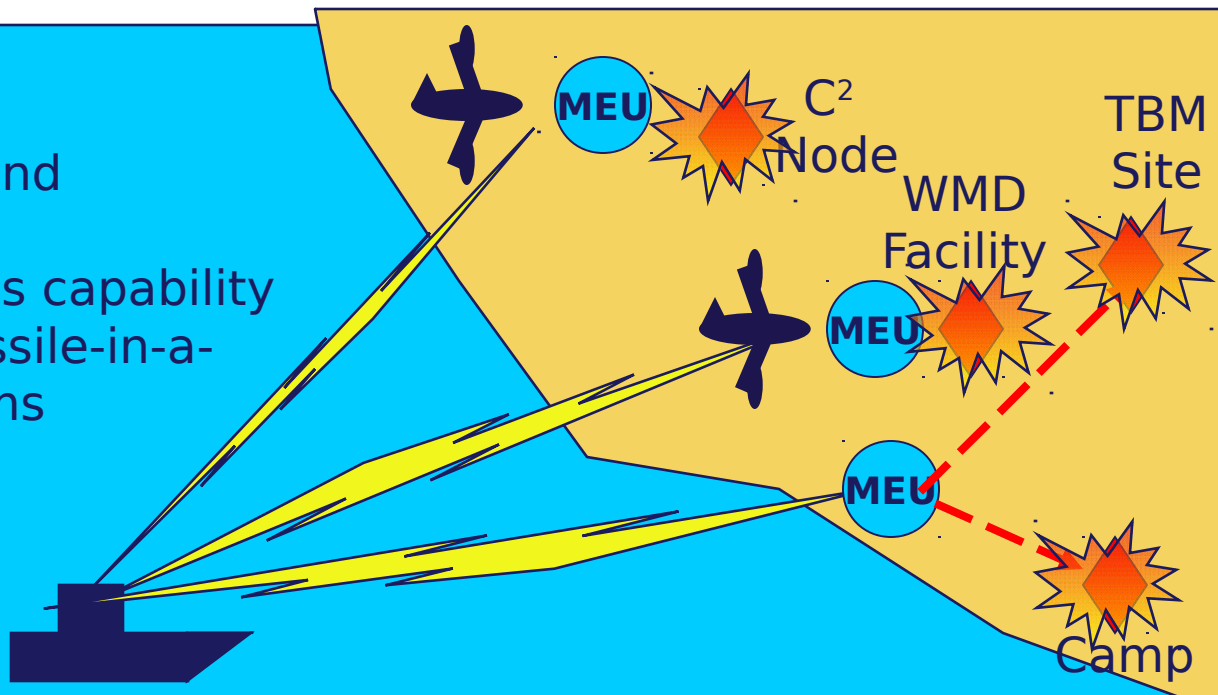
MEU element raids

Examine the raid capability of smaller, task-organized elements of the Marine Expeditionary Unit (Special Operations Capable). Examine also the distributed fires capability provided by emerging “missiles-in-a-box” systems.

- Compare the strike effectiveness of raids and distributed fires systems to that of the Expeditionary Strike Force’s strike capability
 - SOF-like employment of MEU(SOC) elements versus Tomahawk and Carrier Air Wing strike capability.
 - Rapid deployment forward of distributed capability for indirect fires
 - Commander, Joint Task Force and Combatant Commander’s priority targets
 - Ballistic Missile Facilities, Integrated Air Defense System, Weapons of Mass Destruction, etc.
- Measures of Effectiveness
 - Responsiveness to commanders’ changing requirements
 - Time to achieve required target attrition
 - Operational costs of delivering and sustaining capability
 - Bandwidth
 - Assets to deliver, sustain continuous coverage
 - Risk to platforms, personnel

MEU element RAIDS

- Raids by SOF and MEU(SOC)
- Distributed fires capability provided by “missile-in-a-box” type systems





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